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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,988	01/02/2004	Klaus Hartig	44046.203.214.1	5489

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INTELLECTUAL PROPERTY GROUP,  
FREDRIKSON & BYRON, P.A.  
200 SOUTH SIXTH STREET  
SUITE 4000  
MINNEAPOLIS, MN 55402

EXAMINER
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BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/26/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/750,988	<b>Applicant(s)</b> HARTIG, KLAUS	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1762	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-54 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39,41-51,53 and 54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 1-38, 40 and 52 are canceled*

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>attached</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

### DETAILED ACTION

1. The amendment of March 7, 2007 has been received and entered. With the amendment, claims 1-38, 40 and 52 are canceled, and claims 39, 41-51 and 53-54 are pending for examination.

### *Double Patenting*

2. Applicant is advised that should claim 42 be found allowable, claim 53 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The rejection of claims 39 and 54 under 35 U.S.C. 103(a) as being unpatentable over Mishima (US 5338425) in view of Boguslavsky et al (US 4957058) is withdrawn due to applicant's amendments as to stopping and restarting at varying preprogrammed points during the plasma spraying step while plasma spraying continues of March 7, 2007.

5. The rejection of claim 54 under 35 U.S.C. 103(a) as being unpatentable over Mishima (US 5338425) in view of WO 99/61674 (hereinafter '674) is withdrawn due to applicant's amendments as to stopping and restarting at varying preprogrammed points during the plasma spraying step while plasma spraying continues of March 7, 2007.

6. Claims 39 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderstraeten (US 5853816) in view of Leatham et al (US 5143139).

Vanderstraeten teaches that it is well known to desire to uniformly coat cylindrical (drum shaped) sputtering targets. Column 5, lines 1-15 and figure 1. The target is mounted to a target assembly (trolley or carriage 9). Figure 3 and column 7, lines 50-68. The cylindrical target is moved rotationally and laterally, for example. Figure 3, column 7, lines 50-60 and column 8, lines 35-40. A stationary plasma spray device (equipment 11) is activated to generate plasma streams for plasma spraying particles of coating material towards a deposition zone on the cylindrical target. Figure

3 and column 8, lines 20-45. The particles of coating material are plasma sprayed onto the target until a uniform coating of desired thickness is achieved. Figure 3 and column 8, lines 20-45. The lateral motion of the cylindrical target is stopped and restarted at varying points (as each end of the substrate is reached) (which also varies the rate of motion) during the plasma spray step while plasma spraying. Column 8, lines 20-45 (since the carrier/target moves "to and fro" during application and the entire surface is covered, the lateral motion of the target is stopped and restarted as each end of the target is reached and the motion reverses so that "to and fro" motion occurs. At the point of reversal, the motion reaches zero).

Vanderstraeten teaches all the features of these claims except that the stopping and starting points are preprogrammed.

However, Leatham teaches that when spraying atomized material from an applicator to a collector which may be fixed to a control mechanism, it is well known to provide that the control mechanism is programmed to perform a sequence of movements within the spray, so that the desired deposit shape can be generated. Column 1, lines 1-25. For example, Leatham shows that when depositing onto a cylindrical collector, a stationary applicator can be provided, and a rotating and lateral motion can be provided by the collector. Figure 4 and column 6, lines 50-68. The collector can also move in a to and fro motion. Figure 3(b) and column 6, lines 50-55.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vanderstraeten to use a preprogrammed motion with

preprogrammed varying points (as each end of the substrate is reached) where lateral motion is stopped and restarted (and rate of lateral motion varied) as suggested by Leatham in order to provide a desirable coating, because Vanderstraeten teaches a desire to apply coating to a cylindrical target in the form of a sputtering target using a plasma spray system and a to and fro motion of the target and Leatham teaches a device and method for depositing a spray onto a cylindrical substrate with rotating and lateral to and fro motion and teaches that it is well known to preprogram the sequence of movements during such coating so that the desired deposit shape can be generated.

7. Claims 41, 44, 45 and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderstraeten in view of Leatham as applied to claims 39 and 54 above, and further in view of Lauterbach (US 3900639).

Vanderstraeten in view of Leatham teach all the features of these claims except the gas flow to divert smaller particles.

However, Lauterbach teaches a method of plasma spraying. Column 3, lines 10-30. Lauterbach teaches to direct a gas flow across the plasma stream between the plasma spray device and the substrate. Column 3, lines 10-50. This gas flow causes lighter (which would include smaller) particles to be blown out of the plasma stream and conveyed outside of the range or area of the surface of the workpiece to be coated. Column 3, lines 15-45 and 55-65. The substrate can be a cylinder. Column 4, lines 60-65 and figure 4. The specific sizes (volumes) of material to be removed can be precisely

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controlled by varying the speed, etc. of the gas spray based on the material to be used. Column 6, lines 5-20. The gas can be anaerobic, such as argon or nitrogen. Column 5, lines 15-20. The gas can also be reducing, such as hydrogen or air. Column 5, lines 15-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vanderstraeten in view of Leatham to use the diverting gas as suggested by Lauterbach in order to provide a more uniform coating, as Vanderstraeten in view of Leatham desires to apply a uniform coating and Lauterbach teaches a method that allows for a more uniform coating by directing a diverting gas flow across the plasma stream that removes small and undesirable particles. Lauterbach also provides that the gas can be anaerobic, nitrogen, or reducing. It further would have been obvious to perform routine experimentation based on the specific material to be used to optimize the gas flow rate (speed) to remove particles of less than a predetermined size, and to determine the optimum of that size, because Lauterbach teaches that specific sizes (volumes) of material to be removed can be precisely controlled by varying the speed, etc. of the gas spray based on the material to be used.

8. Claims 43 and 46 rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderstraeten in view of Leatham and Lauterbach as applied to claims 41, 44, 45 and 47-51 above, and further in view of Borom et al (US 5897921).

Vanderstraeten in view of Leatham and Lauterbach teaches all the features of these claims except the directing of a gas flow or blast on a surface location of the target proximate the deposition zone to preclean.

However, Borom teaches a method of plasma spray coating a rotating substrate. Figure 1 and column 3, lines 15-25. Borom teaches that prior to coating, a preheating device 26, which can be, for example, another conventional air plasma torch (without powder injection) or other gas torch, is directed at the area to be coated to raise the temperature such that localized melting will take place upon coating. Column 4, lines 30-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vanderstraeten in view of Leatham and Lauterbach to use the preheating gas as suggested by Borom in order to provide a better bonding of the applied coating and to preclean, as Vanderstraeten in view of Leatham and Lauterbach desires to apply a uniform coating by plasma spraying and Borom teaches a method that allows for an improved bonding of the applied coating by preheating the area to be coated with another plasma torch. It is the Examiner's position that this would inherently provide a precleaning of the area as well, due to the temperature of the plasma torch and the temperature needed to raise the area to the melting point.



9. Claims 42 and 53 rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderstraeten in view of Leatham as applied to claims 39 and 54 above, and further in view of Borom et al (US 5897921).

Vanderstraeten in view of Leatham teaches all the features of these claims except the directing of a gas flow or blast on a surface location of the target proximate the deposition zone to preclean.

However, Borom teaches a method of plasma spray coating a rotating substrate. Figure 1 and column 3, lines 15-25. Borom teaches that prior to coating, a preheating device 26, which can be, for example, another conventional air plasma torch (without powder injection) or other gas torch, is directed at the area to be coated to raise the temperature such that localized melting will take place upon coating. Column 4, lines 30-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vanderstraeten in view of Leatham to use the preheating gas as suggested by Borom in order to provide a better bonding of the applied coating and to preclean, as Vanderstraeten in view of Leatham desires to apply a uniform coating by plasma spraying and Borom teaches a method that allows for an improved bonding of the applied coating by preheating the area to be coated with another plasma torch. It is the Examiner's position that this would inherently provide a precleaning of the area as well, due to the temperature of the plasma torch and the temperature needed to raise the area to the melting point.

10. The Examiner notes that the reference to Vanderstraeten was provided on the PTO-892 of Dec. 12, 2005.

*Response to Arguments*

11. Applicant's arguments with respect to claims 39, 41-51 and 53-54 have been considered but are moot in view of the new ground(s) of rejection.

Due to applicant's amendments of March 7, 2007 the rejections using Mishima, Boguslavsky and WO '674 have been withdrawn. However, new rejections using Vanderstraeten and Leatham are provided as to the invention as is now claimed as discussed above. The Examiner notes that the claims as worded allow for varying (stopping/restarting) the rate of motion at repeated points. The Examiner notes that the claims do not require the "preprogrammed points" to be "preprogrammed random points" as described in the specification or the varying of the movement to prevent the continued or repetitive spraying of coating material on the same path and prevent the accumulation of coating material on a single designated repetitive or periodic path. See the paragraph bridging pages 5-6 of the specification, page 15, lines 10-20 of the specification, and the paragraph bridging pages 18-19 of the specification.

*Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KATHERINE BAREFORD  
PRIMARY EXAMINER